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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/945,244	08/31/2001	Ravi K. Sharma	P0419	2287

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DIGIMARC CORPORATION
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EXAMINER	
TABATABAI, ABOLFAZL	

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/945,244	SHARMA ET AL.	
	Examiner	Art Unit	
	Abolfazl Tabatabai	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Augut 31, 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6-14,16,25,28-33,37,38,40-42 and 44* is/are rejected.

7)☒ Claim(s) *3-5,14,15,18-24,27,34-36,39 and 43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/26/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 6-13, 16, 17, 25, 26, 31, 37, 38 and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Cox et al (5,930,369).

Regarding claim 1, Cox discloses a method of detecting a digital watermark in an image comprising the steps of:

providing at least one probability factor to select a plurality of detection blocks in a watermarked image (According to Cox et al " In order to place a length L watermark into an NXN FFT (or DCT) of the image is computed and the watermark is placed into the L highest magnitude coefficients of the transform matrix, excluding the DC component." (See column 12, lines 23-33). In accordance with the teaching of Cox et al, " a watermark is inserted into perceptually most significant regions of the data decomposition." (Column 6, lines 27-29). Thus, the regions in Cox et al correspond to the " L highest magnitude coefficients of the transform matrix " are the regions of the image with the highest probability that watermarks data are located, as called for in the claims. All other regions have a lower probability, the lowest being the regions

corresponding to the DC component. Cox et al process the regions of the image with highest probability in accordance with the procedures outlined at column 9, lines 53-60. The set of values X = X1 --------, Xn (Cox et al: column 9, line 57) are extracted from the highest magnitude, coefficients, hence the highest probability regions. As to" determining the probability that watermarks data is located in various regions of the image", that function is inherently performed in transform domain (Block 30 in Fig. 2). As the coefficients are searched for the highest magnitudes; and,

analyzing the selected detection blocks to locate watermark data (column 7, lines 29-37).

Regarding claim 6, Cox discloses the method according to claim 1, wherein the at least one probability factor comprises selecting a first subset of detection blocks and selecting a second subset of detection blocks (column 12, lines 5-12).

Regarding claim 7, Cox discloses the method according to claim 6, further comprising the step of requiring a relatively broader spacing of the first subset of detection blocks in the image in comparison to the second subset of detection blocks in the image (column 9, lines 52-59 and column 13, lines 12-16).

Regarding claim 8, Cox discloses the method according to claim 6, wherein said analyzing step comprises analyzing the first subset of detection blocks to detect the watermark data (see abstract).

Regarding claim 9, Cox discloses the method according to claim 8, wherein the watermark data comprises a synchronization or orientation signal (column 6, lines 20-24).

Regarding claim 10, Cox discloses the method according to claim 6, wherein said analyzing step comprises analyzing the first or second subset of detection blocks to recover the watermark data(column 13, lines 12-16).

Regarding claim 11, Cox discloses the method according to claim 10, wherein the watermark data comprises a message (column 6, lines 9-11).

Regarding claim 12, Cox discloses the method according to claim 6, wherein said analyzing step comprises analyzing the second subset of detection blocks to determine a translation value of an embedded watermark signal (column 8, lines 33-37).

Regarding claim 13, Cox discloses the method according to claim 1, wherein the at least one probability factor comprises a minimum variance separation between at least two of the plurality of selected detection blocks (column 13, lines 43-45).
determine a translation value of an embedded watermark signal (column 8, lines 33-37).

Regarding claim 16, Cox discloses the method according to claim 1, wherein the at least one probability factor comprises a probability of watermark detection based on a variance distribution (column 11, lines 1-5).

Regarding claim 17, Cox discloses the method according to claim 16, wherein the at least one probability factor further comprises a multivariable distribution (column 13, lines 43-45 and column 14, lines 15-21).
variance distribution (column 11, lines 1-5).

Regarding claim 25, Cox discloses the method according to claim 1, wherein the at least one probability factor comprises an evaluation of detection blocks neighboring a preliminarily selected detection block (column 5, lines 24-28).

Regarding claim 26, Cox discloses the method according to claim 25, wherein the evaluation comprises comparing the neighboring detection blocks' variance to a threshold value (column 13, lines 16-22).

Claim 31, is similarly analyzed as claim 13 above.

Claim 37, is similarly analyzed as claim 17 above.

Regarding claim 38, Cox discloses the method according to claim 1, wherein the at least one probability factor comprises a region's color saturation (column 8, lines 48-52).

Claim 41, is similarly analyzed as claim 1 above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al (U S 5,930,369) in view of Chen et al (U S 6,314,192 B1).

Regarding claim 2, Cox is silent about the specific details wherein the at least one probability factor comprises a minimum distance between at least two selected detection blocks.

In the same filed of endeavor (watermarking), however, Chen discloses a system for information embedding using an ensemble of non-intersecting embedding generators comprising a minimum distance between at least two selected detection blocks (column 25, lined 19-27 and column 28, lines 2-6).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a minimum distance between at least two selected detection blocks as taught by the Chen in the system of Cox because Chen provides an improve system which the embedding value of the particular embedding generator is an embedding value that is the closest of all embedding values of that embedding generator in distance to the host-signal value. It generally is advantageous, from the point of view reducing quantization-induced distortion, to more densely distribute the quantization values irrespective of the anticipated relative connection of the host-signal values.

5. Claims 28-30, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al (U S 5,930,369) in view of Cox et al (U S 6, 108,434).

Regarding claim 28, Cox is silent about the specific details wherein the at least one probability factor is determined adaptively based on at least one of processor speed, available memory and processing time requirements.

In the same filed of endeavor (watermarking), however, Cox discloses counteracting geometric distortions for DCT based watermarking comprising memory (column 7, lines 1-2).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use memory as taught by the Cox et al (U S 6, 108,434) in the system of Cox et al (U S 5,930,369) because Cox et al (U S 6, 108,434) provides Cox et al (U S 5,930,369) an improve system that the provision of a watermark detection which corrects for affine distortion of the watermarked data, such as image or video data.

Regarding claim 29, Cox is silent about the specific details wherein the at least one probability factor comprises determining a number of blocks for the plurality of detection blocks.

In the same filed of endeavor (watermarking), however, Cox discloses counteracting geometric distortions for DCT based watermarking comprising at least one probability factor comprises determining a number of blocks for the plurality of detection blocks (column 4, lines 51-54).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use at least one probability factor comprises determining a number of blocks for the plurality of detection blocks as taught by the Cox et al (U S 6, 108,434) in the system of Cox et al (U S 5,930,369) because Cox et al (U S 6, 108,434)

provides Cox et al (U S 5,930,369) an improve system that the provision of a watermark detection which corrects for affine distortion of the watermarked data, such as image or video data.

Regarding claim 30, Cox is silent about the specific details wherein the at least one probability factor comprises an amount of overlap between the plurality of detection blocks.

In the same filed of endeavor (watermarking), however, Cox discloses counteracting geometric distortions for DCT based watermarking comprising comprises an amount of overlap between the plurality of detection blocks (column 7, lines 61-67).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use comprises an amount of overlap between the plurality of detection blocks as taught by the Cox et al (U S 6, 108,434) in the system of Cox et al (U S 5,930,369) because Cox et al (U S 6, 108,434) provides Cox et al (U S 5,930,369) an improve system that the provision of a watermark detection which corrects for affine distortion of the watermarked data, such as image or video data.

Claim 32, is similarly analyzed as claim 13 above.

Claim 33, is similarly analyzed as claim 28 above.

6. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Collier (U S 6,360,000 B1) in view of Chen et al (U S 6, 314,192 B1).

Regarding claim 40 Collier discloses a method for detecting a watermark in an image comprising the steps of:

selecting a plurality of detection regions (column 3, lines 64-67 and column 11, lines 4-8), wherein at least two of the selected detection regions overlap (column 5, lines 58-67 and column 6, lines 1-11).

However, Collier is silent about the specific details regarding the step of:

providing the selected detection regions maintain a minimum distance from one another.

In the same filed of endeavor (watermarking), however, Chen discloses a system for information embedding using an ensemble of non-intersecting embedding generators comprising the step of:

providing the selected detection regions maintain a minimum distance from one another (column 25, lined 19-27 and column 28, lines 2-6).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a minimum distance between at least two selected detection blocks as taught by the Chen in the system of Collier because Chen provides Collier an improve system which the embedding value of the particular embedding generator is an embedding value that is the closest of all embedding values of that embedding generator in distance to the host-signal value. It generally is advantageous, from the point of view reducing quantization-induced distortion, to more densely distribute the quantization values irrespective of the anticipated relative connection of the host-signal values.

7. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (U S 5,828,467) in view of Todd (U S 6, 181,802 B1).

Regarding claim 42, Suzuki discloses a method to select at least one region for detection of a watermark signal comprising the steps of:

determining variance for each region in an image neighborhood (column 6, lines 55-67 and column 7, lines 1-9);

comparing the variance of each neighborhood region to a first threshold (column 6, lines 55-67 and column 7, lines 1-9).

However, Collier is silent about the specific details regarding the step of:

selecting a central region in the neighborhood when the variance of at least some of the neighborhood regions is greater than the first threshold.

In the same filed of endeavor (watermarking), however, Todd discloses a system for coding information by inserting codes in strongly featured image regions comprising the step of:

selecting a central region in the neighborhood when the variance of at least some of the neighborhood regions is greater than the first threshold (column 2, lines 49-54 and column 14, lines 4-17).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a minimum distance between at least two selected detection blocks as taught by the Todd in the system of Suzuki because Todd provides Suzuki an improve system for inserting coded information into an image, analyzing the image, identifying strongly featured regions, determining for at least one such region a making parameter, and inserting coded information into such region in a predictable or identifiable manner by an amount determined by said masking parameter. A main

advantage of applying the coded information by altering the image in a predictable manner is that the information can be recovered in a decoding process at a remote location without having the original to hand.

8. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (U S 5,742,704) in view of Chen et al (U S 6, 314,192 B1).

Regarding claim 44, Suzuki discloses a method of using probability factors to select detection blocks in an image, the detection block to be analyzed to detect a digital watermark embedded in the image, said method comprising the steps of:

requiring a minimum variance separation between at least two of the selected detection blocks (column 4, lines 15-33 and 56-67);

requiring a minimum border distance between at least one selected detection block and an image border (column 11, lines 10-14); and,

before selecting a detection block, requiring at least some of the detection block's neighboring blocks meet at least a minimum threshold variance requirement column 4, lines 56-67 and column 5, lines 1-23).

However, Suzuki is silent about the specific details regarding the step of:

requiring a minimum distance between any two selected detection blocks.

In the same filed of endeavor (watermarking), however, Chen discloses a system for information embedding using an ensemble of non-intersecting embedding generators comprising the step of:

requiring a minimum distance between any two selected detection blocks; (column 25, lined 19-27 and column 28, lines 2-6).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a minimum distance between at least two selected detection blocks as taught by the Chen in the system of Suzuki because Chen provides Suzuki an improve system which the embedding value of the particular embedding generator is an embedding value that is the closest of all embedding values of that embedding generator in distance to the host-signal value. It generally is advantageous, from the point of view reducing quantization-induced distortion, to more densely distribute the quantization values irrespective of the anticipated relative connection of the host-signal values.

Allowable Subject Matter

9. Claims 3-5 and 14, 15 and 18-24, 27, 34-36, 39 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other Prior Art

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rhoads (U S 6,324,573 B1) discloses linking of computers using information steganographically embedded in data objects.

Cox et al (U S 6,208,735) discloses secure spread spectrum watermarking for multimedia data.

Gustafson et al (U S 6,442,284 B1) disclose watermark detection utilizing regions

with higher probability of success.

Contact Information

10. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.

The Examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mehta Bhavesh M, can be reached at (703) 308-5246. The fax phone number for organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2625

November 24, 2004

A- Tabatabai